

CLAIMS

1. A correlation system for configuring and modifying a control relationship between controlling apparatus and controlled apparatus, said correlation system comprising:

programming means comprising a hand-held configuration and manually operable by a user to transmit correlation signals to said controlled apparatus and to said
5 controlling apparatus; and

said controlled apparatus and said controlling apparatus each having sensing means responsive to said correlation signals for effecting said control relationship between said controlled apparatus and said controlling apparatus.

2. A correlation system in accordance with claim 1, characterized in that said correlation signals comprise spatially transmitted signals.

3. A correlation system in accordance with claim 1, characterized in that said programming means comprises:

a wand having a hand-held configuration;

a programmable controller;

5 switching means manually operable by a user so as to generate state signals as input signals to said programmable controller; and

said programmable controller is responsive to said state signals so as to execute particular functions as desired by said user.

4.. A correlation system in accordance with claim 3, characterized in that said wand further comprises mode selector means, adapted for receiving separate and independent inputs from said user, and further adapted to generate and apply second state signals as input signals to said programmable controller.

5. A correlation system in accordance with claim 4, characterized in that:
said wand further comprises transmitting means for transmitting said correlation
signals to said controlled apparatus and to said controlling apparatus; and
said programmable controller is responsive to said state signals and to said second
5 state signals for applying activation signals to said transmission means.

6. A correlation system in accordance with claim 5, characterized in that said
transmission means comprises an IR emitter.

7. A correlation system in accordance with claim 1, characterized in that:
said correlation system further comprises a communications network for
electronically coupling said controlling apparatus to said controlled apparatus;
said controlled apparatus comprises at least one controlled programmable
5 controller having a unique address identifiable through said communications network of
said correlation system; and
said controlled apparatus further comprises sensing means responsive to said
correlation signals for applying control signals to said at least one controlled
programmable controller.

8. A correlation system in accordance with claim 7, characterized in that said
controlling apparatus comprises:

at least one controlling programmable controller having a unique address
identifiable through said communications network of said correlation system; and
5 sensing means responsive to said correlation signals, for applying control signals
to said at least one controlling programmable controller.

9. A correlation system in accordance with claim 1, characterized in that said controlling apparatus comprises a plurality of switch units.

10. A correlation system in accordance with claim 1, characterized in that said controlled apparatus comprises a plurality of lighting units.

11. A correlation system in accordance with claim 3, characterized in that said wand further comprises a trigger switch manually operable by said user, so as to generate further state signals as input signals to said programmable controller.

12. A correlation system in accordance with claim 3, characterized in that:
said wand further comprises a visible light having first and second states; and
said programmable controller is adapted to selectively generate and apply
activation signals as input signals to said visible light, so as to change a state of said
5 visible light between said first and second states.

13. A correlation system in accordance with claim 12, characterized in that:
said wand further comprises a lens spaced forward of said visible light, with said
lens being transparent to both visible and infrared light; and
said lens being a collimating lens for purposes of focusing said visible light into a
5 series of parallel light paths.

14. A correlation system in accordance with claim 1, characterized in that said system comprises a plurality of separate and independent programming means.

15. A correlation system in accordance with claim 4, characterized in that said mode selector means is adapted to generate and apply said second state signals to said programmable controller as signals indicative of SET, ADD and REMOVE command signals.

16. A correlation system in accordance with claim 1, characterized in that said

controlled apparatus comprises transmission means for transmitting address code signals to said programming means, where such address code signals are representative of a unique address of said controlled apparatus.

17. A correlation system in accordance with claim 16, characterized in that each of said wands includes means for indicating successful reception and execution of command signals.

18. A correlation system in accordance with claim 17, characterized in that said means for indicating successful reception and execution of command signals comprises a visible light.

19. A correlation system in accordance with claim 1, characterized in that said configuring and modifying of said control relationship between said controlling apparatus and said controlled apparatus is performed in the absence of any transmission of signals from said programming means which identify any element of said programming means.

20. A correlation system in accordance with claim 1, characterized in that said programming means further comprises means for transmitting identification signals which expressly identify one or more elements of said programming means.

21. A correlation system in accordance with claim 1, characterized in that:
said programming means comprises a plurality of hand-held and manually operable wands;

each of said wands comprises means for transmitting identification signals
5 indicative of particular identification numbers of said wands; and

said correlation system further comprises means responsive to said identification signals for establishing a wand prioritization hierarchy.

22. A correlation system in accordance with claim 1, characterized in that said system comprises means for storing signals indicative of a last state in which said control relationship was configured.

23. A correlation system in accordance with claim 1, characterized in that said correlation system further comprises means for tracking and identifying which of a plurality of elements of said programming means is within a physical space associated with said correlation system.

24. A correlation system in accordance with claim 1, characterized in that said system further comprises means for limiting capability of said programming means to effect said control relationship, based upon identification of said programming means and/or a particular physical space in which said control relationship is attempting to be effected.

25. A correlation system in accordance with claim 1, characterized in that said controlled apparatus comprises one or more of a group consisting of light fixtures, microphones, cameras, monitors and wall sockets.

26. A correlation system in accordance with claim 25, characterized in that said controlled apparatus are provided with standard power and data connections, and each of the devices of said controlled apparatus are connected to a control bus.

27. A correlation system in accordance with claim 1, characterized in that at least a subset of said controlled apparatus are provided with a unique global identifier.

28. A correlation system in accordance with claim 27, characterized in that said identifier reflects at least the manufacturer, type, class of device and particular unit.

29. A correlation system in accordance with claim 28, characterized in that:

said correlation system further comprises a control unit transmitting command signals to all devices of said controlled apparatus connected to a bus, for purposes of identifying elements of said controlled apparatus; and

5 each element of said controlled apparatus comprises means for responding, by transmitting its identifier as a signal.

30. A correlation system in accordance with claim 29, characterized in that said correlation system further comprises an identifier recording unit capable of receiving said identifier signals and converting said identifier signals to unique identifiers, and storing said identifiers in memory.

31. A correlation system in accordance with claim 30, characterized in that said system further comprises means for determining a set of identifiers, and providing said identifiers to a control unit.

32. A correlation system in accordance with claim 31, characterized in that placement of a device indicator adjacent a device triggers said device to transmit its identifier by means of said control bus to said control unit.

33. A correlation system in accordance with claim 32, characterized in that said control unit comprises means for recording said device identifier as a tagged device, and mapping said tagged devices to a particular control.

34. A correlation system in accordance with claim 33, characterized in that said correlation system comprises means for mapping a control to a particular parameter at a particular location within a workspace, thereby providing for direct control of locations, rather than control of devices.

35. A correlation system in accordance with claim 1, characterized in that all electrical signals transmitted among said programming means, said control apparatus and said controlled apparatus are wireless.

36. A method for use in a correlation system for configuring and modifying a control relationship between controlling apparatus and controlled apparatus, said method comprising:

using a programming means comprising a hand-held configuration manually operable by a user so as to transmit correlation signals to said controlled apparatus and to said controlling apparatus;

sensing, at said controlled apparatus, receipt of said correlation signals;

sensing, at said controlling apparatus, receipt of said correlation signals; and

effecting said control relationship between said controlled apparatus and said controlling apparatus based on said transmitted correlation signals.

37. A method for use in a correlation system for configuring and modifying a control relationship between controlling apparatus and controlled apparatus, said method comprising:

configuring a programming means comprising a hand-held configuration manually operable by a user so as to transmit correlation signals to said controlled apparatus;

transmitting further correlation signals from said programming means to said controlled apparatus;

determining, through programmable processes, prior sets of correlation signals transmitted by said programming means;

determining a next prior set of correlation signals transmitted to said controlling apparatus; and

effecting a particular control relationship between said controlled apparatus and said controlling apparatus based on a sequential relationship existing between transmission of said correlation signals to said controlled apparatus and said correlation signals to said controlling apparatus.

38. The method in accordance with claim 36, characterized in that said method further comprises means for configuring a particular controlling apparatus so as to control states of a plurality of controlled apparatus.

39. The method in accordance with claim 36, characterized in that said method further comprises steps for effecting a master/slave relationship among two or more of said controlled apparatus.

40. A method for use in a correlation system for configuring and modifying a control relationship between sets of switches and sets of lights, said method comprising:

using a hand-held and manually operable wand having transmission means for transmitting a first particular command signal C to switch S, where C is representative of the sequence number of the command signal from said wand, and S is representative of the particular switch to which the command signal is transmitted;

transmitting a second particular command signal C+1 to light L, where L is representative of a particular one of said lights to which said command signal C+1 is transmitted;

10 transmitting a third particular command signal C+2 to light M, where M is
representative of a particular one of said lights to which said command signal C+2 is
transmitted;

15 transmitting a forth particular command signal C+3 to light N, where N is
representative of a particular one of said lights to which said command signal C+3 is
transmitted;

 transmitting a fifth particular command signal C+4 to switch T, where T is
representative of a particular one of said set of switches to which said command signal
C+4 is transmitted;

20 determining that said command signal C+3 was a command signal to said light N;
 effecting control of said light N by said switch T;

 determining that said command signal C+2 was a command signal to said light M;
 effecting control of said light M by said switch T;

 determining that said command signal C+1 was a command signal to said light L;
 effecting control of said light L by said switch T;

25 determining that said command signal C was a command signal to said switch S;
and

 determining that a particular sequential configuration of control has been
completed.

41. A method in accordance with claim 40, characterized in that said method
further comprises the steps of:

 transmitting a sixth particular command signal C+5 to switch U, where U is

representative of a particular one of said switches to which said command signal C+5 is
5 transmitted;

determining that said command signal C+4 is a command signal transmitted to
switch T; and

effecting said control relationship so that switch U is a master switch for control
of said lights L, M and N, and said switch T is slaved to said switch U.

42. A method for use in a correlation system for configuring and modifying a
control relationship between sets of switches and sets of lights, said method comprising:

using a hand-held and manually operable wand having transmission means for
transmitting command signals to certain ones of said lights;

5 transmitting further command signals to particular ones of said switches; and
removing a controlling relationship between said certain ones of said switches and
such certain ones of said lights, based upon said command signals and said further
command signals.

43. A method in accordance with claim 36, characterized in that said method
further comprises configuring and modifying said control relationship between said controlling
apparatus and said controlled apparatus in the absence of any transmission of signals from said
programming means which identify any element of said programming means.

44. A method in accordance with claim 36, characterized in that said method
further comprises transmitting identification signals from said programming means which
expressly identify one or more elements of said programming means.

45. A method in accordance with claim 36, characterized in that said method

further comprises storing signals indicative of a last state in which said control relationship was configured.

46. A method in accordance with claim 36, characterized in that said method further comprises means for tracking and identifying which of a plurality of elements of said programming means is within a physical space associated with said correlation system.

47. A method in accordance with claim 36, characterized in that said method further comprises limiting capability of said programming means to effect said control relationship, based upon identification of said programming means and/or a particular physical space in which said control relationship is attempting to be effected.

48. A correlation system in accordance with claim 36, characterized in that said system further comprises means for generating a unique global identifier for each of at least subset of said controlled apparatus.

49. A method in accordance with claim 36, characterized in that said method further comprises generation of a unique global identifier reflecting at least the manufacturer, type, class of device and particular unit of each of at least a subset of said controlled apparatus.

50. A method in accordance with claim 36, characterized in that said method further comprises:

transmitting command signals from a control unit to all devices of said controlled apparatus connected to a bus, for purposes of identifying elements of said controlled apparatus; and

each element of said controlled apparatus responding by transmitting an identifier as a signal.

51. A method in accordance with claim 36, characterized in that said method

further comprises having an identifier recording unit receiving identifier signals and converting said identifier signals to unique identifiers, and storing said identifiers in memory.

52. A method in accordance with claim 36, characterized in that said method further comprises placement of a device indicator adjacent to a device of said controlled apparatus, and triggering said device to transmit its identifier by means of a control bus to a control unit.

53. A method in accordance with claim 52, characterized in that said method further comprises recording said device identifier as a tagged device, and mapping said tagged devices to a particular control.

54. A method in accordance with claim 36, characterized in that said method further comprises transmission of all signals between said control apparatus and said controlled apparatus as wireless signals.